

CLAIMS:

What is claimed is:

1. An optical assembly for coupling an optical device to an optical receiver, comprising:

5 a lens comprising a reflecting curved surface for bending and confining a light beam and a focusing curved surface for focusing the light beam, the lens conveying the light beam between the optical device and the optical receiver by reflection off of the reflecting curved surface and transmission through the focusing curved surface.

10 2. The optical assembly according to claim 1, wherein the reflecting curved - surface and the focusing spherical surface are part of an integrated lens.

3. The optical assembly according to claim 1, wherein the reflecting curved surface controls the divergence angle of the reflected beam before being focused by the focusing curved surface.

15 4. The optical assembly according to claim 1, further comprising:

a monitoring unit;

and wherein the reflecting curved surface transmits a portion of the beam along a monitoring path to the monitoring unit.

20 5. The optical assembly according to claim 1, wherein the lens is a lens assembly having at least two mating parts, a first mating part including the reflecting surface and the second mating part including the focusing surface.

6. The optical assembly according to claim 5, wherein the first and second mating parts include mating surfaces for engaging each other and wherein the mating surfaces are in the optical path of the beam and at least one of the mating surfaces has a reflective portion shaped to reflect a portion of the beam along a monitoring path.

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7. The optical assembly according to claim 6, wherein the mating surfaces each include at least one alignment surface that facilitates alignment of the mating surfaces during engagement.

10 8. The optical assembly according to claim 7, wherein the reflective portion of at least one of the mating surfaces includes a coating to create reflection of the beam.

9. The optical assembly according to claim 5, wherein the monitoring unit monitors at least one property of the beam.

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10. The optical assembly according to claim 1, further comprising:

a translucent block positioned between the lens and the end of the fiber, the translucent block reducing backward propagation of the beam toward the optical device.

20 11. The optical assembly according to claim 10, wherein the block has an engaging surface for engaging the end of the optical fiber and wherein a focusing point of the focusing surface is coincident with the engaging surface.

12. The optical assembly according to claim 1, wherein the optical device is a light device and the optical receiver is an optical fiber for sending out the light.

13. The optical assembly according to claim 1, wherein the optical device is an optical
5 fiber and the optical receiver is a light receiving device.

14. The optical assembly according to claim 1, wherein the curved reflecting surface is a parabolic surface.

10 15. The optical assembly according to claim 1, wherein the curved focusing surface is a spherical surface.

16. The optical assembly according to claim 1, wherein the curved reflecting surface internally reflects the beam into the material that comprises the lens.

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17. The optical assembly according to claim 1, wherein the curved reflecting surface externally reflects the beam off of the material that comprises the lens.

18. The optical assembly according to claim 1, wherein the reflecting surface bends the
20 light beam 90 degree.

19. The optical assembly according to claim 1, wherein the reflecting surface collimates the light beam after the reflection.